

NPIC/TSSG/ESD/EL-68-69  
16 July 1969

MEMORANDUM FOR: Chief, Development & Engineering Division, TSSG  
THROUGH: Chief, Engineering Support Division, TSSG  
SUBJECT: Request for Support  
REFERENCE: a) Memorandum NPIC/TSSG/DED-1682-69 dated  
25 June 69  
b) Memorandum NPIC/TSSG/ESD/EL-65-69 dated  
7 July 69

1. Reference (a) requested support from the Exploratory Laboratory; reference (b) outlined those parts of the request which EL could respond to. The requested effort with the exception noted in reference (b) is complete and this memorandum will report that work.

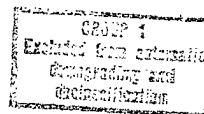
2. The subject of interest was a set of five Air Force Resolution targets all of different contrasts. For bookkeeping purposes these are numbered one through five with decreasing contrast.

3. The results of measuring the modulation depicted in Chart I are defined as:

$$m = \tanh \left\{ \frac{\Delta D}{2 \log_{10} e} \right\}$$

4. The results of measuring the resolution limits using these targets in the cited rear screen projection with the screen removed are illustrated in Chart II. The bulb burned out while the last reading was being taken resulting in the blank at 30X for target 5. Measurement was accomplished using one subject only viewing the projected arrival image at 20X magnification.

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5 It is the understanding of EL from conversations with [redacted] of Boeing that the attached charts are adequate for his purposes. This memorandum will close out this project unless contrary instructions are received.

25X1

25X1

[redacted]  
Chief, Exploratory Laboratory  
ESD/TSSG

Attachment: Charts I & II

Distribution:

Original - Ch/DED/TSSG  
1 - ESD/TSSG  
1 - EL/ESD/TSSG

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## TARGET

| 1     |     | 2     |     | 3     |     | 4     |     | 5     |      |
|-------|-----|-------|-----|-------|-----|-------|-----|-------|------|
| group | m   | group | m   | group | m   | group | m   | group | m    |
| 5-1   | .94 | 5-1   | .79 | 4-5   | .34 | 4-2   | .17 | 2-2   | .045 |
| 5-2   | .93 | 5-2   | .71 | 4-6   | .32 | 4-3   | .17 | 2-3   | .045 |
| 5-3   | .92 | 5-3   | .69 | 5-1   | .30 | 4-4   | .15 | 2-4   | .045 |
| 5-4   | .91 | 5-4   | .67 | 5-2   | .30 | 4-5   | .17 | 2-5   | .035 |
| 5-5   | .88 | 5-5   | .63 | 5-3   | .28 | 4-6   | .15 | 2-6   | .035 |
|       |     |       |     | 5-4   | .25 | 5-1   | .17 |       |      |
|       |     |       |     | 5-5   | .22 |       |     |       |      |

CHART II

## HIGHEST RESOLVED GROUP

| TARGET        | 1   | 2   | 3   | 4   | 5   |
|---------------|-----|-----|-----|-----|-----|
| MAGNIFICATION |     |     |     |     |     |
| 5             | 6-6 | 6-6 | 6-3 | 6-1 | 4-6 |
| 15            | 7-1 | 7-4 | 7-1 | 6-6 | 5-6 |
| 30            | 6-6 | 7-2 | 6-5 | 6-3 | —   |

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NPIC/TSSG/DED-1682-69  
25 June 1969

MEMORANDUM FOR: Chief, Engineering Support Division, TSSG  
ATTENTION: Chief, Exploratory Laboratory  
SUBJECT: Request for Support  
REFERENCE: (a) DED Memorandum NPIC/TSSG/DED-1532 dated 14 April 1969

1. The Chief, DED, in reference (a), requested that a set of special resolution targets be made for use in conducting subjective tests of sample rear projection screen materials. These targets were subsequently manufactured and used in the tests together with eighteen selected targets from operational imagery. The machine used to display these films was the Richardson Film Viewer located in room 2N333.

2. In order to scientifically analyze the data collected during the tests, certain precise measurements from the resolution targets, the operational imagery, and the Film Viewer must be known. Specifically, the contrast level of each of the resolution targets must be measured, three densitometer measurements, spaced more-or-less equally across each of the eighteen selected operational imagery targets, must be made; and the optical resolution of the Film Viewer (without screen) must be measured.

3. It is requested that the Chief, Exploratory Laboratory have the above enumerated measurements made and deliver the results to the DED technical monitor no later than 15 July 1969.

4. The test films may be obtained from the DED technical monitor for this project, [redacted]

25X1

[redacted]  
Chief, Development & Engineering Division, TSSG

25X1

Distribution:

Original - Addressee

✓ 1 - NPIC/TSSG/DED

3 - NPIC/TSSG/DED/SRB

NPIC/TSSG/DED/SRB/[redacted] (25 JUNE 69) (03019 & 997065)

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NPIC/TSSG/ESD/EL-65/69  
7 July 1969

MEMORANDUM FOR: Chief, Development & Engineering Division, TSSG  
THROUGH: Chief, Engineering Support Division, TSSG  
SUBJECT: Request for Support  
REFERENCE: Memorandum NPIC/TSSG/DED-1602-69 dated 25 June 69

1. In the reference it was requested that the Exploratory Laboratory provide the following services:

- i. Measure the contrast of a set of resolution targets.
- ii. Measure the density of several frames of operational imagery.
- iii. Measure the resolution of a film viewer without the screen.

2. Item (i) has been accomplished and the results delivered to [redacted] of Bosin. [redacted] of the Exploratory Laboratory in conversations with [redacted] discussed items (ii) and (iii). Since EL has no capability for routinely tracing 9" film on a Micro-Densitometer but APED does have this capability, arrangements were made by [redacted] to have that item performed by APED. Item (iii) will be relatively routine to perform, however, the viewer is not available at this time. [redacted] said he would notify EL when the viewer becomes available.

3. No further work is planned on this project by EL until the viewer becomes available.

[redacted]  
Chief, Exploratory Laboratory  
ESD/TSSG

Distribution:

Original - CR/ESD/TSSG  
1 - ESD/TSSG  
1 - EL/ESD/TSSG

NPIC/TSSG/ESD/EL [redacted] (8 July 1969)

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